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Modification of Petroleum Bitumen by Oxygen-Containing Compounds and Transition Metal Oxides

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Abstract

© 2015 Springer Science+Business Media New York The patterns of change in component and structural-group composition of bituminous binders modified by oxygen-containing compounds and finely dispersed Mn (II) oxide are determined. Manganese ions, taking part in high-temperature oxidation-reduction reactions of modifier compounds containing acyl radicals and double bonds, are capable of forming oxy-radicals in the presence of air oxygen. The content of alcohol-benzene resins, aromatic structures, and carbonyl groups increases in the samples. The obtained samples of modified binders have improved adhesive and low-temperature properties, which allow production of high-strength asphalt concrete surfacings.

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Keywords

adhesion additive, adhesion with a mineral filler, asphalt concrete, road asphalt, road bitumen